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February 17, 2009

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Response to Request for Additional Information – License Amendment for
Measurement Uncertainty Recapture Power Uprate - Calvert Cliffs Nuclear
Power Plant, Unit Nos. 1 and 2

REFERENCES:

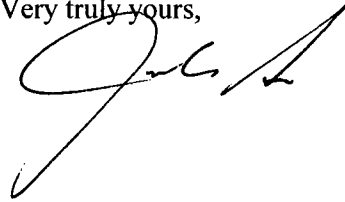
- (a) Letter from Mr. D. R. Bauder (CCNPP) to Document Control Desk (NRC), dated August 29, 2008, License Amendment Request: Appendix K Measurement Uncertainty Recapture – Power Uprate Request
- (b) Letter from Mr. D. V. Pickett (NRC) to Mr. J. A. Spina (CCNPP), dated October 3, 2008, Request for Additional Information Re: License Amendment for Measurement Uncertainty Recapture Power Uprate – Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2
- (c) Letter from Mr. M. D. Flaherty (CCNPP) to Document Control Desk (NRC) dated December 29, 2008, Response to Request for Additional Information – License Amendment for Measurement Uncertainty Recapture Power Uprate

In Reference (a), Calvert Cliffs Nuclear Power Plant, Inc. submitted a license amendment request to the Nuclear Regulatory Commission (NRC) for a measurement uncertainty recapture power uprate for Calvert Cliffs Nuclear Power Plant, Units 1 and 2. In Reference (b) the NRC requested additional information to be submitted to support their review of the submittal. Reference (c) contains Calvert Cliffs responses. Following receipt of our responses, a phone call between NRC staff and Calvert Cliffs staff was conducted to clarify our response to RAI 2 (Reference c). Attachment (1) contains the clarifying information requested during the phone call with the NRC staff.

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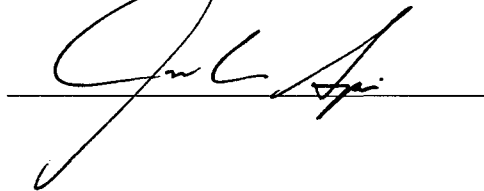
Should you have any questions regarding this matter, please contact Mr. Jay S. Gaines at (410) 495-5219.

Very truly yours,



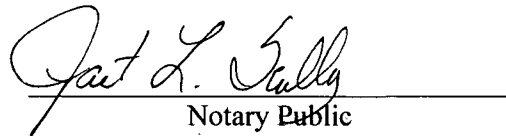
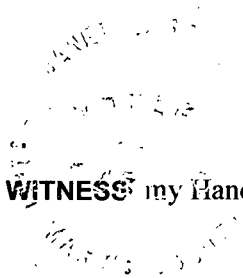
STATE OF MARYLAND :
: TO WIT:
COUNTY OF CALVERT :

I, James A. Spina, being duly sworn, state that I am Vice President - Calvert Cliffs Nuclear Power Plant, Inc. (CCNPP), and that I am duly authorized to execute and file this License Amendment Request on behalf of CCNPP. To the best of my knowledge and belief, the statements contained in this document are true and correct. To the extent that these statements are not based on my personal knowledge, they are based upon information provided by other CCNPP employees and/or consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.



Subscribed and sworn before me, a Notary Public in and for the State of Maryland and County of St. Mary's, this 17th day of February, 2009.

WITNESS my Hand and Notarial Seal:



Notary Public

My Commission Expires:

March 1, 2011
Date

JAS/KLG/bjd

Attachment: (1) Response to Request for Additional Information - Measurement Uncertainty Recapture Power Uprate

cc: D. V. Pickett, NRC
S. J. Collins, NRC

Resident Inspector, NRC
S. Gray, DNR

ATTACHMENT (1)

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION -
MEASUREMENT UNCERTAINTY RECAPTURE POWER UPRATE**

ATTACHMENT (1)

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION – MEASUREMENT
UNCERTAINTY RECAPTURE POWER UPRATE**

RAI 1:

Recalculate the Reactor Vessel fluence values provided in Section IV.5 of Attachment 2 of Calvert Cliffs Measurement Uncertainty Recapture Evaluation LAR of August 29, 2008 in accordance with the guidance of Regulatory Guide 1.99.

CCNPP Response:

The below values were calculated in accordance with guidance of Regulatory Guide 1.99:

	Unit 1 Fluence	Unit 1 Fluence	Unit 2 Fluence	Unit 2 Fluence
	Current	1.4% Power Uprate	Current	1.4% Power Uprate
Vessel Clad Interface	5.09E+19	5.11E+19	5.74E+19	5.79E+19
1/4 T Location	3.04E+19	3.05E+19	3.42E+19	3.45E+19
3/4 T Location	1.08E+19	1.08E+19	1.22E+19	1.23E+19

Note that this information may be different than the data used for reactor vessel surveillance capsule withdrawals and is subject to evaluation and re-calculation as necessary whenever new information is obtained (i.e., data obtained from future surveillance capsule withdrawals).

RAI 2:

State whether Calvert Cliffs is in compliance with Regulatory Guide 1.190 in regards to the determination of reactor vessel neutron fluence values used in this submittal.

CCNPP Response:

The determination of reactor vessel neutron fluence values was performed using methodologies that are consistent with the overall intent, although not the specific details, of Regulatory Guide 1.190 (Reference 1).

For Calvert Cliffs Unit 1, the current dosimetry, neutron fluence, and radiation embrittlement results were documented in Babcock & Wilcox (B&W) Report BAW-2160 (Reference 3) and submitted to the Nuclear Regulatory Commission (NRC) via the correspondence of Reference 4. For Calvert Cliffs Unit 2, the current dosimetry, neutron fluence, and radiation embrittlement results were documented in B&W Report BAW-2199 (Reference 5) and submitted to the NRC via the correspondence of Reference 6.

The surveillance capsule withdrawal schedules were determined via American Society for Testing and Materials (ASTM) E185 (Reference 7), while the neutron fast and total fluxes, neutron fast and total fluences, and the displacement per atom values of the surveillance specimens and the corresponding values for the reactor vessel were determined in accordance with the guidelines in ASTM E482 (Reference 8) and Regulatory Guide 1.99 (Reference 2). The DOT4 discrete ordinates transport code was used in R-theta (midplane) and R-Z coordinates using a P₃ expansion of the cross-section transfer matrix and flux moments, an S₈ r-theta quadrature, and a multi-group energy structure above 0.1 eV. The methodology employs absolute fluence calculations with documented and verified plant-specific data, local fission isotopics, and temperature-dependent water densities.

Note that Regulatory Guide 1.190 was issued seven years after Calvert Cliffs last surveillance capsule analysis. Calvert Cliffs Nuclear Power Plant Units 1 and 2 surveillance capsules will be extracted in 2010

ATTACHMENT (1)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION – MEASUREMENT UNCERTAINTY RECAPTURE POWER UPRATE

and 2011, respectively; after which updated fluence analyses will be performed that conform to appropriate regulatory guidance.

References

1. Regulatory Guide 1.190, March 2001, Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence
2. Regulatory Guide 1.99 Revision 2, May 1988, Radiation Embrittlement of Reactor Vessel Materials
3. B&W Report BAW-2160, June 1993, Analysis of Capsule 97° BG&E CCNPP Unit No. 1
4. Letter from Mr. R. E. Denton (BG&E) to Document Control Desk (NRC), June 22, 1993, Analysis of the Calvert Cliffs Unit No. 1 Reactor Vessel Surveillance Capsule Withdrawn from the 97° Location
5. B&W Report BAW-2199, February 1994, Analysis of Capsule 97° BG&E CCNPP Unit No. 2
6. Letter from Mr. R. E. Denton (BGE) to Document Control Desk (NRC), March 18, 1994, Analysis of the Calvert Cliffs Unit No. 2 Reactor Vessel Surveillance Capsule Withdrawn from the 97° Location
7. ASTM E185-82, Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels, E 706
8. ASTM E482-89, Standard Guide for Application of Neutron Transport Methods for Reactor Vessel Surveillance, E 706